

CHAPTER 3

MEMORABLE ENGINEERS

The Many Roles of an Engineer: U.S. Grant III

Leadership ability and technical expertise have led Army Engineers into a variety of jobs. A noteworthy career was achieved by President Ulysses S. Grant's grandson, U.S. Grant III. A 1903 West Point graduate, he served in the Cuban pacification of 1906, the Punitive Expedition against Mexico in 1916, and the First World War.

In the 1920's he turned to civil works, serving first as district engineer in San Francisco. Then, beginning in 1925, as officer in charge of public buildings and parks in the nation's capital, Grant gained a reputation as one of Washington's "characters"—and, more important, as one of its ablest public servants. Impatient with fools and visiting firemen, he wore heavy underwear to work in winter so that he could turn off the heat in his office; unwelcome visitors soon fled to warmer regions. Freed of distractions, he carried out a large-scale reconstruction of the White House (despite Calvin Coolidge's reported complaint, "If it's as bad as you say, why doesn't it fall down?"), improved the Mall, and laid out Rock Creek and Potomac Parkway. As executive officer of the National Capital Park and Planning Commission, he led the fight for area-wide planning and an improved park system. During World War II, and for years afterward, he served as the commission's president.

Education and scholarship also claimed Grant's interest. He served as vice-president of George Washington University and as president of the Columbia Historical Society. His sense of history led him to form strong ties to preservationists in the capital and to head the nation's Civil War Centennial. For 40 years he was an important influence in shaping Washington. Still, he was best remembered as an Engineer-administrator. "I think," said the civilian who headed the planning commission's staff, "he had the highest standard of public service of anybody I've ever known."

Albert E. Cowdrey

Source: Albert E. Cowdrey, *A City for the Nation*.

The Engineer As Humorist: George H. Derby in San Diego, 1853

Among the many Engineer officers of diverse talents and skills, Lieutenant George H. Derby, who wrote delightful stories under the name of John Phoenix, stands out as both topographer and humorist.

In late July 1853, on the eve of his departure from San Francisco for San Diego, Derby went to the dining room of his hotel for dinner. He watched attentively as the hotelkeeper carved a roast of veal into small pieces, explaining: "There is but little of it and I want to make it go as far as possible."

"In that case," said Derby, "I'll take a large piece. I think I can make it go as far as anybody. I am going to San Diego."

At his new station, topographical engineer Derby took a back seat to humorist John Phoenix. While the engineer worked at improving the harbor, the humorist became a frequent contributor to the *San Diego Herald*. When Derby's work proved difficult, Phoenix told his readers that the frustrated engineer "was sent out from Washington 'to dam the San Diego River' and he informed me with a deep sigh and melancholy smile that he [has been damning it ever since]."

Dedicated to keeping his readers abreast of engineering developments, Phoenix informed them: "The report that Lieutenant Derby has sent to San Francisco for a lathe to be used in turning the San Diego River is, we understand, entirely without foundation."

Derby made his mark as both engineer and humorist. His explorations of the Colorado River and the California gold fields contributed to the westward advance of American civilization; and his comic wit amused and delighted many readers, including his avid admirer Mark Twain.

Frank N. Schubert

Source: (1) George R. Stewart, *John Phoenix, Esq.* (New York: Henry Holt, 1937). (2) John Phoenix, *The Squibob Papers* (1865) and *Phoenixiana* (1866).

The Engineer As Archeologist: James H. Simpson in the Southwest, 1849

Men of diverse interests and talents, Engineer explorers in the trans-Mississippi West made significant contributions to scientific knowledge as they probed the new country. Lieutenant James H. Simpson, while reconnoitering the little known canyonlands of western New Mexico during the summer of 1849, discovered the ruins of ancient Indian pueblos, large prehistoric communities of stone, mortar, and wood, incredibly assembled with only stone tools by their unknown builders. There, in the canyons called Chaco and de Chelly, were the material remains of an Indian culture now known to be at least a thousand years old.

In a ten-mile strip of the floor of Chaco Canyon, Simpson found twelve large communal houses, each capable of housing several hundred to a thousand people, as well as many smaller structures. Delighted with his discovery, Simpson moved eagerly from one pueblo to another, visiting the accessible rooms, counting, measuring, and recording their contents. Farther west, in Canyon de Chelly, he again made dramatic discoveries. Here he found the ruins of still more large pueblos, including the one he called Casa Blanca because of its conspicuous wall of white plaster.

Lieutenant Simpson's discoveries, which were of lasting scientific importance, propelled him to prominence as an archeologist and ethnologist. In a region then unknown to Anglo-Americans, he found two important prehistoric sites, rich in artifacts that told much about the lives of ancient aborigines. To this day, nearly all accounts of the pueblo communities begin by acknowledging his pathbreaking efforts. While pushing back the physical frontier, Lieutenant Simpson showed the way to new scientific and cultural horizons.

Frank N. Schubert

Source: (1) James H. Simpson, *Navaho Expedition: Journal of a Military Reconnaissance from Santa Fe, New Mexico, to the Navaho Country Made in 1849*, ed. by Frank McNitt (Norman: University of Oklahoma Press, 1964), 3, 43 - 45. (2) Zorro A. Bradley, *Canyon de Chelly* (Washington: National Park Service, 1973), 4.

Three Memorable Corps Civilians: Green, Williamson and Koonce

Today the Corps of Engineers combines civil and military talent in a way that is unique in the Government. A hundred years ago, however, the position of civilian professionals employed by the Corps

was uncertain at best. Some officers saw them as an unwelcome necessity, forced on the Corps by a shortage of military personnel. Then, toward the end of the nineteenth century, some exceptionally able civilians—and the officers who believed in them—helped to change the Engineers' outlook.

Bernard Richardson Green was a twenty-year-old graduate engineer in 1863 when he began work as a Civilian Assistant on the defenses of the New England coast. Here he met a man who was to transform his life—Captain Thomas Lincoln Casey of the Corps of Engineers. By 1877 Casey was a lieutenant colonel in Washington, with responsibility for a variety of projects, including the completion of the Washington Monument. Remembering his able young assistant, he sent for Green to help him. Together they redesigned and finished the long-neglected, half-built Monument. Then they went on to complete the State, War, and Navy (Executive Office) Building and to construct the Library of Congress. After Casey died in 1896, Green continued to maintain the library building but branched out as well, directing construction of the Natural History Building of the Smithsonian, the Central Public Library on Mount Vernon Square, and the Pennsylvania State Capitol in Harrisburg. A distinguished figure in Washington life, he became president of the Cosmos Club and a leader in urban planning and civic reform.

Like Green, Sidney Bacon Williamson met a gifted Engineer officer while working as a Civilian Assistant—in his case, Captain George W. Goethals. In 1909, ordered by President Theodore Roosevelt to take over construction of the Panama Canal, Goethals placed Williamson in charge of the Pacific Division with a staff of civilians. At the same time Goethals shrewdly put the Atlantic Division of his vast project into military hands and encouraged the competition that resulted. The United States was the real winner of the contest. His reputation established by four-and-a-half years of some of the most complex engineering work carried out at that time, Williamson went on to reorganize the Bureau of Reclamation, head many important projects, and ended his career as a full-time consultant to the Corps.

But not only civil engineers were finding a field for their talents with the agency. Outstanding among the lawyers who had joined the staff of the Chief of Engineers was North Carolina-born George W. Koonce. Working with Colonel Alexander Mackenzie, a future Chief of Engineers, Koonce codified the laws against obstruction of the waterways and drew up the Refuse Act of 1899. In future decades, this law would provide the Federal Government with its first effective tool not only to remove obstructions from the waterways but to regulate effluents for the sake of the environment as well. Additionally, the obstruction laws and the permit programs they engendered helped to make the Corps a regulatory as well as a construction agency. Koonce served the Corps well from 1886 to 1946—a sixty-year career hard to equal either for sheer length or for his many contributions to the growth and development of the Engineer mission.

In the early years of the Corps, the place of civilians had been in doubt and proper recognition not always accorded to their services. Green, Williamson and Koonce not only demonstrated what civilian professionals could offer the Corps but showed that the Corps could provide a rich and satisfying career to those who served it.

Albert E. Cowdrey

Source: (1) Albert E. Cowdrey, "Pioncering Environmental Law: The U.S. Army Corps of Engineers and the Refuse Act," *Pacific Historical Review*, 44 (Aug. 1975), 331 - 49. (2) Michael C. Robinson, "People in Public Works: Sydney B. Williamson," *APWA Reporter* (May 1978), 4 - 5. (3) "Memoir of Sydney Bacon Williamson," *Trans. ASCE*, 80 (Dec. 1916), 2151 - 56. (5) David McCullough, *The Path Between the Seas*.

Engineer As Steamboat Designer

Colonel Stephen H. Long, an Engineer officer famous for his exploration of the American West and for the survey and construction of early American railroads, also designed his own steamboat. In 1818, Long planned the building of the experimental craft, the *Western Engineer*, to transport himself and a task force of scientists, naturalists, and artists as far west as possible by water on their projected trip into the frontier. The result was a steamboat designed to navigate narrow, shallow, snag-littered channels of inland rivers. It contained a particularly strong engine to provide increased power for pushing against swift currents. Another novel feature was a paddlewheel built into the stern to reduce the danger of damage from snags. The boat had a seventy-five by thirteen-foot hull with the weight of the machinery carefully distributed to permit increased maneuverability in shallow channels.

Altogether the *Western Engineer* was anything but a typical steamer. In fact, when launched in May 1819, its appearance was fearful—"Huge, black, scaly, the gigantic serpent blasted steam from its gaping mouth as it thrashed down the Ohio River, white foam dashing violently behind." In order to protect the vessel from Indian attack, Long installed a bulletproof pilot house. In addition, he had a cannon mounted on the bow, placed howitzers along the sides, and armed the crew with rifles and sabres. The boat had a serpent-like shape to frighten any would-be attackers.

The *Western Engineer*, drawing but nineteen inches of water compared to the five or six feet of most steamboats, became the prototype of the western river steam vessels. In it, Long and his crew explored the Ohio River and ascended the Mississippi and Missouri

Rivers into Nebraska. On this journey, Long's *Western Engineer* traveled farther west than any steamboat ever had.

Harold K. Kanarek

Source: Leland R. Johnson, *Men, Mountains and Rivers: An Illustrated History of the Huntington District, U.S. Army Corps of Engineers, 1754 - 1974*, 17 - 18, 21.

Major General James B. McPherson: Engineer and Army Commander

One of the most striking characteristics of the Corps of Engineers during the Civil War was its ability to provide officers who could serve in almost any capacity, from building roads to directing staffs to commanding troops. Certainly the best example of this facility was Major General James B. McPherson. An 1853 graduate of West Point, McPherson worked on the defenses of New York Harbor and was Superintending Engineer of the construction of the Alcatraz Island fortifications when the Civil War broke out. He promptly returned to the East, where he aided in recruiting the U.S. Engineer Battalion.

In late 1861 he was transferred to the Department of Missouri. There he attracted the attention of then Brigadier General Ulysses S. Grant, on whose staff he served as chief engineer, Army of the Tennessee, at the capture of Forts Henry and Donelson and at the Battle of Shiloh (6 - 7 April 1862). For five months he was the Superintendent of Military Railroads for the District of West Tennessee, and managed, despite a shortage of equipment and constant guerrilla harassment, to keep the railroads open for Grant's forces.

From October 1862 onward he was constantly in the field, commanding first a brigade, then a division, and finally an army corps in the operations against Vicksburg. During the siege of the fortress, he frequently acted as his own engineer. His most arduous field service was in Major General William T. Sherman's Atlanta campaign, when he led the Army of the Tennessee. Now a brigadier general in the Regular Army, as well as a major general of volunteers, he frequently commanded Sherman's flanking column, participating in the actions of Resaca, Dallas, Kennesaw Mountain, the crossing of the Chattahoochee, and the battles before Atlanta.

Tragically, on 22 July 1864, he was killed in action. While hurrying to correct a faulty deployment of his troops, he encountered a party of Confederate skirmishers. Upon ignoring their order to halt, he was shot out of his saddle. McPherson, who had been chosen by

Sherman as his successor, and whom Grant expected to eventually become general-in-chief, was just thirty-six years old. Grant had named him and Sherman as “the men of whom. . . I feel indebted for whatever I have had of success,” while Sherman called him “that bright particular star.”

On 18 October 1876, members of the Society of the Army of the Tennessee unveiled an equestrian statue of their commander in a public square of Washington, D.C. It was a memorial to a man now almost forgotten, but one who clearly held the loyalty and the respect of his contemporaries.

Dennis S. Lavery

Source: (1) Lavery, “Army Engineers in the Civil War,” (MS in Historical Division). (2) Bruce Catton, *This Hallowed Ground* (New York: Doubleday and Company, 1956), 344 - 45.

The Engineer As Cartographer: Lieutenant Gouverneur K. Warren’s Map of the Trans Mississippi West

The Army Engineers have always been nation builders. In the days before the Civil War, their contributions to national development included railroad and wagonroad surveys and even exploration. And after every expedition came a map, showing the lay of the land, the courses of the waterways, and the precious wood, water, and grass that sustained travelers in unpopulated regions. But these maps, important as they were, were fragments, parts of the total picture of the trans-Mississippi West. In the year of 1854, when Commodore Matthew C. Perry was opening the ports of Japan to American trade, we still had no reliable map of the western domain.

All this changed over the next three years. The man responsible, Lieutenant Gouverneur K. Warren, was a lean, black-haired graduate of the United States Military Academy. Ordered to compile a map as part of the survey for a railroad route to the Pacific, Warren worked incessantly from 1855 to 1857. He found large gaps in the available data on the northern plains but filled them with information garnered during three expeditions that he led into Nebraska and the Dakotas. Henry L. Abbot, a fellow topographical engineer and future Chief of Engineers who knew Warren in those years, later recalled the industry and dedication Warren took to the great task: “the midnight hour,” Abbot recalled, “often found [Warren] hard at work comparing and reconstructing his preliminary tracings or poring over the old reports for missing data.”

And the effort was well spent. Warren's map, published in 1858, provided the nation with its first accurate and unified look at the vast western territories. Minor refinements still needed to be made: other Engineers were just then planning expeditions into uncharted reaches of the Colorado and Yellowstone Rivers. But the general outline of the West was now clear; a cartographic milestone was reached.

Frank N. Schubert

Source: Frank N. Schubert, "Vanguard of Expansion: Army Engineers in the trans-Mississippi West, 1819 - 1879" (MS in Historical Division).

Portrait of an Engineer: Defender of New York in 1814

Recent reports of vast underground bomb shelters in the Soviet Union have revived American interest in civil defense. Since 1961, the Army Corps of Engineers has been planning to defend the civil population against possible enemy attack. Corps involvement in activity of this sort goes back to the nation's early years.

From the start of the War of 1812, British warships plying the Atlantic captured American merchantmen, blockaded major ports, and raided towns and villages for supplies and prizes. A time passed, and despite stirring victories by the small American Navy, enemy squadrons stepped up their harassment. In 1813 they attacked Norfolk, sent troops marauding through nearby Hampton, bombarded Lewiston in Delaware, burned Maryland settlements on Chesapeake Bay, and landed almost 1,000 men on the North Carolina coast. The next year, British admirals extended their blockade along the entire eastern seaboard and launched amphibious assaults, not only grabbing a large chunk of Maine's territory, but also seizing and burning the U.S. capital and occupying Alexandria. Terror gripped the coast.

Recalling its capture by the British during the Revolution, New York—the nation's largest city—felt especially threatened. While British ships cruised just off Sandy Hook, New Yorkers turned to the Army for help. During most of 1813 and 1814, Brigadier General Joseph G. Swift, Chief Engineer of the Army and superintendent at West Point, directed the city's defenses. Until mid-1814, he concentrated on the harbor's permanent works.

In the summer of 1814, a reinforced British fleet appeared off New York. Fearing an amphibious attack from the north or east, the city's Committee of Defense asked Swift to take charge of emergency preparations. Quickly, he drew up a plan calling for two lines of field fortifications, one stretching along hilltops outside Brooklyn, the other cutting across Manhattan from the mouth of the Harlem

River to the Hudson. Then he began to implement the plan and called upon citizens for support. The response was overwhelming.

Between August and November, 38,000 people worked on the defenses. Carpenters and pharmacists, brewers and lawyers, butchers and college students, tailors and artists, free blacks and city officials—rich and poor rubbed shoulders in the trenches, wielding axes, shovels, and spades. Organized in parties of 1,200 - 2,000, often working from sun to sun, and singing to keep their spirits high, they built two lines of field defenses. Volunteers put in a total of more than 100,000 work days. People unable to work contributed money, food, tools—and over 5,000 fascines for the parapets.

Astride his horse Flim Nap, or out on the Engineer yacht, Swift oversaw all defense preparations. Before long, he was also plotting strategy, inspecting troops, and directing ordnance, artillery, quartermaster, and medical activities. In the event of a British landing, he intended to lead the main force to repulse them. Impressed by the strength of New York's defenses, the enemy chose easier targets to attack.

In gratitude for Swift's service, the Common Council declared him a benefactor of the city, showered him with gifts, and commissioned John Wesley Jarvis to paint his full-length portrait. After the war, to commemorate the Chief Engineer's heroic effort in their city's behalf, officials hung the painting in City Hall. Recently restored, it hangs there today in the Council Committee Room.

Charles E. Walker

Source: (1) Joseph Gardner Swift, *Memoirs*, 131 - 38, 173. (2) Swift, Report on the Defence of the City of New York, MS, New York Historical Society. (3) Proceedings of the Committee of Defense, 1814 - 1815, MS, NYHS. (4) Rocellus S. Guernsey, *New York City and Vicinity During the War of 1812*.

The Use of Civil Experience in Wartime: Gouverneur K. Warren at Gettysburg

By the summer of 1863, Major General Gouverneur K. Warren, United States Volunteers, had developed a keen eye for terrain. As a Topographical Engineer during the 1850's, Warren had led three exploring expeditions into Nebraska and the Dakotas. In addition he had produced the first comprehensive map of the trans-Mississippi West, an accomplishment that has brought him wide and deserved acclaim.

This talent for assessing terrain, nurtured in civil assignments before the secession crisis, stood Warren in good stead during the Civil

War. On the second day of the battle of Gettysburg, Warren saw that the hill called Little Round Top on the southern flank of the Union line was weakly defended. Right away he knew that a strong Confederate attack on the hill menaced the entire Army. To the west, on Seminary Ridge, Confederate General John B. Hood reached the same conclusion and sent a force to take the hill. When Hood's men arrived they found strong Union reinforcements already in place. After a sharp fight, the Confederates withdrew. Warren had beaten them to the hill and saved the day for the Union.

Frank N. Schubert

Source: Frank N. Schubert, "Vanguard of Expansion: the Army Engineers in the trans-Mississippi West, 1819-1879," unpublished manuscript on file in the Historical Division, OCE.